In the Claims

1. (Original) A method for in-stream compression of bytes of digital image sensor data, comprising:

(a) capturing a scene and converting the captured scene into bytes of digital image sensor data;

(b) compressing the bytes of digital image sensor data;

(c) storing the compressed bytes of digital image sensor data in a temporary memory; and

(d) transferring the bytes of digital image sensor data from the temporary memory to a permanent memory.

2. (Original) The method as claimed in claim 1, wherein the bytes of digital image sensor data transferred from the temporary memory to a permanent memory is compressed bytes of digital image sensor data.

3. (Original) The method as claimed in claim 1, wherein the compressed bytes of digital image sensor data are decompressed before being transferred from the temporary memory to a permanent memory.

4. (Original) The method as claimed in claim 1, wherein the temporary memory is a static random access memory.

5. (Original) The method as claimed in claim 1, wherein the permanent memory is FLASH memory.

6. (Original) The method as claimed in claim 1, wherein the compression of the bytes of digital image sensor data comprises:

(b1) masking a specified number of least significant bits of a byte of digital image sensor data; and

(b2) encoding the masked bytes of digital image sensor data to generate compressed bytes of digital image sensor data.

7. (Original) The method as claimed in claim 1, wherein the compression of the bytes of digital image sensor data comprises:

(b1) subtracting alternate bytes of digital image sensor data to produce an entropy-reduced data model; and

(b2) encoding the difference bytes of digital image sensor data to generate compressed bytes of digital image sensor data.

8. (Original) The method as claimed in claim 1, wherein the compression of the bytes of digital image sensor data comprises:

(b1) masking a specified number of least significant bits of a byte of digital image sensor data;

(b2) subtracting alternate bytes of digital image sensor data to produce an entropy-reduced data model; and

(b3) encoding the difference bytes of digital image sensor data to generate compressed bytes of digital image sensor data.

9. (Original) The method as claimed in claim 1, wherein the compression of the bytes of digital image sensor data comprises:

(b1) splitting a byte of digital image sensor data into a predetermined number of channels, each channel having a bit width such that the sum of the bit widths of each channel equals a bit width of the byte of digital image sensor data;

(b2) operating upon each channel of digital image sensor data with distinct cumulative distribution functions;

(b3) multiplexing the distributed digital image sensor data; and

(b4) encoding the multiplexed digital image sensor data using arithmetic compression encoding.

10. (Original) The method as claimed in claim 1, wherein the compression of the bytes of digital image sensor data comprises:

(b1) masking a specified number of least significant bits of a byte of digital image sensor data;

(b2) splitting the masked byte of digital image sensor data into a predetermined number of channels, each channel having a bit width such that the sum of the bit widths of each channel equals a bit width of the byte of digital image sensor data;

(b3) operating upon each channel of digital image sensor data with a distinct cumulative distribution function;

(b4) multiplexing the distributed digital image sensor data; and

(b5) encoding the multiplexed digital image sensor data using arithmetic compression encoding.

11. (Original) The method as claimed in claim 1, wherein the compression of the bytes of digital image sensor data comprises:

(b1) subtracting alternate bytes of digital image sensor data to produce an entropy-reduced data model;

(b2) splitting the difference byte of digital image sensor data into a predetermined number of channels, each channel having a bit width such that the sum of the bit widths of each channel equals a bit width of the byte of digital image sensor data;

(b3) operating upon each channel of digital image sensor data with a distinct cumulative distribution function;

(b4) multiplexing the distributed digital image sensor data; and

(b5) encoding the multiplexed digital image sensor data using arithmetic compression encoding.

12. (Original) The method as claimed in claim 1, wherein the compression of the bytes of digital image sensor data comprises:

(b1) masking a specified number of least significant bits of a byte of digital image sensor data;

(b2) subtracting alternate bytes of digital image sensor data to produce an entropy-reduced data model;

(b3) splitting the difference byte of digital image sensor data into a predetermined number of channels, each channel having a bit width such that the sum of the bit widths of each channel equals a bit width of the byte of digital image sensor data;

(b4) operating upon each channel of digital image sensor data with a distinct cumulative distribution function;

(b5) multiplexing the distributed digital image sensor data; and

(b6) encoding the multiplexed digital image sensor data using arithmetic compression encoding.

13. (Withdrawn) A method of modeling, in stream, bytes of digital image sensor data for compression, comprising:

(a) masking a specified number of least significant bits of a byte of digital image sensor data; and

(b) subtracting alternate bytes of digital image sensor data to produce an entropy-reduced data model.

14. (Withdrawn) A method of encoding, in stream, bytes of digital image sensor data for compression, comprising:

(a) splitting a byte of digital image sensor data into a predetermined number of channels, each channel having a bit width such that the sum of the bit widths of each channel equals a bit width of the byte of digital image sensor data;

(b) operating upon each channel of digital image sensor data with a distinct cumulative distribution function;

(c) multiplexing the distributed digital image sensor data; and

(d) encoding the multiplexed digital image sensor data using arithmetic compression encoding.

15. (Withdrawn) A method of in-stream compression of bytes of digital image sensor data, comprising:

(a) masking a specified number of least significant bits of a byte of digital image sensor data;

(b) subtracting alternate bytes of digital image sensor data to produce an entropy-reduced data model;

(c) splitting a difference byte of digital image sensor data into a predetermined number of channels, each channel having a bit width such that the sum of the bit widths of each channel equals a bit width of the byte of digital image sensor data;

(d) operating upon each channel of digital image sensor data with a distinct cumulative distribution function;

(e) multiplexing the distributed digital image sensor data; and

(f) encoding the multiplexed digital image sensor data using arithmetic compression encoding.

16. (Withdrawn) A method of division free arithmetic encoding, comprising:

(a) fixing a number of elements in a histogram to a number that is a power of 2;

(b) determining a number of elements in a bin of a histogram; and

(c) performing a bit shifting operation upon the determined number of elements in a bin of a histogram to find a probability of symbol to be encoded.

17. (Withdrawn) The method as claimed in claim 16, wherein the number of elements in a histogram is fixed by adaptively removing elements from the histogram as new elements arrive.

18. (Withdrawn) The method as claimed in claim 16, wherein the number of elements in a histogram is fixed by removing elements from the histogram as new elements arrive in a weighted round-robin fashion.

19. (Withdrawn) The method as claimed in claim 17, wherein the removal elements from the histogram as new elements arrive is realized by tracking an order in which elements are added and removing the elements in the tracked order.

20. (Withdrawn) The method as claimed in claim 19, wherein the tracking of the order in which elements are added and removed is realized by incrementing a number of a bin to which

an addition pointer is pointing when a new data element has been produced to be added to the histogram and decrementing a value of a to which a subtraction pointer is pointing when a new data element has been produced to be added to the histogram.

21. (Withdrawn) A method for adaptively fixing a number of elements in a histogram, comprising:

(a) producing a new data element to be added to the histogram;

(b) adding the new data element to the histogram;

(c) tracking an order in which new data elements are added; and

(d) removing a data element from the histogram in accordance with the tracked order.

22. (Withdrawn) The method as claimed in claim 21, wherein the tracking of the order in which elements are added and removed is realized by incrementing a number of a bin to which an addition pointer is pointing when a new data element has been produced to be added to the histogram and decrementing a value of a to which a subtraction pointer is pointing when a new data element has been produced to be added to the histogram.

23. (Withdrawn) A method for adaptively fixing a number of elements in a histogram, comprising:

(a) producing a new data element to be added to the histogram;

(b) adding the new data element to the histogram;

(c) incrementing a bin value, the bin value being number of elements in a bin, when a new data element is added to the histogram;

(d) determining if elements are to be removed from a present bin in the histogram;

(e) decreasing a value representing a number of elements to be removed from the present bin in the histogram when it is determined that elements are to be removed from the present bin in the histogram; and

(f) removing an element from the histogram when the value representing a number of elements to be removed is decreased.

24. (Withdrawn) The method as claimed in claim 23, further comprising:

(g) advancing to a next bin from which elements are to be removed when it is determined that elements are not to be removed from the present bin in the histogram;

(h) resetting the value representing a number of elements to be removed from the present bin in the histogram to a predetermined value.

25. (Withdrawn) The method as claimed in claim 24, wherein the predetermined value is equal to the value representing a number of elements to be removed from the present bin in the histogram divided by four.

26. (Withdrawn) The method as claimed in claim 23, wherein the element from the histogram is not removed if the value representing a number of elements to be removed from the present bin in the histogram is equal to one.